

## INTERNATIONAL SEARCH REPORT

International application No. .

PCT/JP03/14664

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl' H02J7/00, H02J7/02, F02D29/02, F02D29/06, F02D45/00,  
B60L11/18, B60T8/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl' H02J7/00, H02J7/02, F02D29/02, F02D29/06, F02D45/00,  
B60L11/18, B60T8/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

|                           |           |                            |           |
|---------------------------|-----------|----------------------------|-----------|
| Jitsuyo Shinan Koho       | 1922-1996 | Toroku Jitsuyo Shinan Koho | 1994-2004 |
| Kokai Jitsuyo Shinan Koho | 1971-2004 | Jitsuyo Shinan Toroku Koho | 1996-2004 |

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| X<br>A    | JP 2002-218667 A (Mitsubishi Electric Corp.),<br>02 August, 2002 (02.08.02),<br>Par. Nos. [0034] to [0038]; Figs. 7, 8<br>(Family: none)  | 1,5<br>2-4,6-13       |
| X<br>A    | JP 2002-330545 A (Nissan Motor Co., Ltd.),<br>15 November, 2002 (15.11.02),<br>Par. Nos. [0124] to [0131]; Figs. 16, 17<br>(Family: none) | 1,5<br>2-4,6-13       |
| A         | JP 2000-354303 A (The Chugoku Electric Power<br>Co., Inc.),<br>19 December, 2000 (19.12.00),<br>Full text<br>(Family: none)               | 1-13                  |

 Further documents are listed in the continuation of Box C. See patent family annex.

## \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
28 January, 2004 (28.01.04)

Date of mailing of the international search report  
10 February, 2004 (10.02.04)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category*    | Citation of document, with indication, where appropriate, of the relevant passages                     | Relevant to claim No. |
|--------------|--|-----------------------|
| A            | JP 07-095701 A (Toshiba Corp.),<br>07 April, 1995 (07.04.95),<br>Full text<br>(Family: none)           | 1-13                  |
| A            | JP 2753907 B2 (Equos Research Co., Ltd.),<br>06 March, 1998 (06.03.98),<br>Full text<br>& US 5412293 A | 1-13                  |
| P, X<br>P, A | JP 2003-148310 A (Denso Corp.),<br>21 May, 2003 (21.05.03),<br>Claims; Fig. 3<br>& FR 2829308 A1       | 1-3<br>4-13           |

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## Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:

because they relate to subject matter not required to be searched by this Authority, namely:

2.  Claims Nos.:

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3.  Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

As explained in the extra sheet, the present international application includes three inventions which do not satisfy the requirement of unity of invention.

Main invention: claims 1-4, 7

Second invention: claims 5, 6

Third invention: claims 8-13

(Continued to extra sheet)

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

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Continuation of Box No. II of continuation of first sheet(1)

The main invention has a "special technical feature" relating to that "among the first and second energy accumulation source of the series-connected power source, voltage of the energy accumulation source arranged at a higher voltage side is detected and if the detected voltage is smaller than a first threshold value, the energy accumulation source arranged at the higher voltage side is charged by the DC/DC converter."

The second invention has a "special technical feature" relating to that "when starting a motor which is in a stop state, among the first and the second energy accumulation source of the series-connected power source, voltage of the energy accumulation source arranged at a higher voltage side is detected and the output power of the DC/DC converter is adjusted according to the voltage value detected."

The third invention has a "special technical feature" relating to that "when the regenerative power of the motor is charged by the first energy accumulation source and the second energy accumulation source from the power conversion circuit, the DC/DC converter control means controls the DC/DC converter so that the input current of the first energy accumulation source is not greater than the allowable input current of the first energy accumulation source."

There is no technical relationship among those inventions involving one or more of the same or corresponding technical features including the special technical feature. Accordingly, these inventions are not so linked as to form a single general inventive concept.